

Semi Tractor-Trailer Driver Dies in Median Crossover Crash; 10 Others Die

Incident Number: 10KY008



Picture of semi involved in median crossover crash. Picture property of KY FACE.

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Kentucky Fatality Assessment and Control Evaluation (FACE) Program

Incident Number: 10KY008

Release Date: March 30, 2012

**Subject: Semi Tractor-Trailer Driver Dies in Median
Crossover Crash; 10 Others Die**

Summary

At approximately 5:00 AM on a spring morning, a 45 year-old male semi-tractor trailer driver headed south on an interstate highway with a back-haul of brake drums. He crossed a 60' grass depressed median, drove over a cable barrier, was struck by a northbound 15-passenger van with 12 occupants, hit a cut rock wall and caught fire. The semi truck driver and 10 occupants within the van died.

To prevent future occurrences of similar incidents, the following recommendations have been made:

Recommendation No. 1: Commercial vehicle carriers should establish and implement an appropriate comprehensive safety and driver training program that includes recognition of driver distraction and driver fatigue.

Recommendation No. 2: Median barriers along rural interstate roadways with high volumes of large truck traffic should be built with test level 5 barriers.

Recommendation No. 3: Commercial vehicles should be equipped with the latest communication technology available.

Recommendation No. 4: Transportation companies should consider banning cell phone use by drivers while operating a commercial vehicle.

Recommendation No. 5: Transportation companies should require drivers to have adequate rest before operating a commercial vehicle.

Recommendation No. 6: Research should be performed on the design and location of semi truck fuel tanks to reduce their exposure on commercial vehicles.

Background

The semi driver had 21 years of professional driving experience and had been employed by the carrier for approximately three months as a long haul truck driver when the crash occurred. The driver had also served as a driving instructor for two years.

The transportation company had been in business since 2004, carried general freight, and according to a government website, had 27 power units and 26 drivers. The primary elements of the company's safety program consisted of drivers watching safety videos; the trucking company did not have a fatigue recognition program.

According to the National Transportation Safety Board (NTSB) report, the transportation company's semis were governed to 65 mph with cruise control and 70 mph when utilizing only the accelerator.

Temperatures on the day of the incident ranged from 37 degrees Fahrenheit to 54 degrees Fahrenheit.

Investigation

On a spring morning via a newscast, the Kentucky Fatality Assessment Control and Evaluation program was notified of an occupational fatality involving a semi tractor-trailer driver and 10 occupants within a passenger van. A field investigator went to the scene, took photographs, and gathered information. The National Transportation Safety Board (NTSB) was also at the scene and conducted an investigation. The NTSB report, the Kentucky State Police collision report, and the local coroner interview were used for this report.

One Monday in the Spring, a 45-year-old long haul commercial truck driver commenced his route from a loading facility located in a southern state to a northern state. He was driving a 1999 semi conventional cab equipped with a sleeper berth and pulling a 1998 53' van. Upon delivering this load, on Tuesday at 12:56 PM he picked up a back-haul of truck brake drums and commenced driving back toward his home state in the south. This route would be approximately 682 miles long. The gross vehicle weight was 76,600 pounds.

Twenty-one miles after beginning the haul-back route, the semi driver experienced mechanical problems with the semi. These difficulties required the semi to be repaired before the route could be completed. The unit was towed to a repair facility where a mechanic replaced the antilock brake system valves, drive shaft, and brake lines. Repairs were completed Thursday afternoon. While the driver waited, he spent his days at the repair shop and slept Tuesday and Wednesday nights at a motel.

On Thursday morning, the driver checked out of the motel and returned to the repair shop. By 3:45 pm, repairs were completed, and the driver commenced his return route southward and drove until approximately 7:00 pm when he stopped and took a break for an hour and 22 minutes. He then commenced driving until 11:15 pm when he began a 4 hour and 45 minute break.

At approximately 4:00 am on Friday, the driver again began his route southward. He had been driving for approximately one hour on a four-lane interstate. It was a rural section of interstate and dark, the pavement wet from rain several hours before, and the speed limit was 70 miles per hour. The terrain was gently rolling, the stretch of interstate was straight, and the driver was in

the left travel lane. A 60-foot wide grass median, depressed in the middle, separated the north and south travel lanes. Each travel lane was 12' wide. Both directions had 11' wide right-hand shoulders. The southbound direction had a 3.5' left-hand shoulder, and the northbound side had a 4' left-hand shoulder. Each shoulder had rumble strips and were delineated with yellow stripes. Travel lanes in both directions were separated with dotted white lines. There was a 4 strand Test-Level 4 cable barrier eight feet from the northbound left travel lane. Due to the slope where the cable barrier was located, it met Test-Level 3 criteria.

While driving, the semi driver made and received several calls from his cell phone. During one phone conversation, the driver was confused because he thought it was about 6:00 am and not 5:00 am.

At approximately 5:14 am the driver was talking on his cell phone when the call was dropped. The recipient of the call made several unsuccessful attempts to reconnect with the driver. As the cell phone call dropped, the driver of the semi drove out of the left southbound travel lane, over the left side rumble strip, through the median where he applied his brakes, ran over the four-strand cable barrier, crossed the two northbound travel lanes and right shoulder, and traveled across a ditch and into a cut rock wall. The semi tractor-trailer turned onto its right side and the semi and trailer caught fire. Brake drum parts spilled from the trailer into the ditch along the cut rock wall.

When the semi overrode the cable barrier, a post punctured the right side fuel tank. As the semi entered the left northbound travel lane, a 2000 model 15-passenger van traveling north in the left lane struck the semi between the right side fuel tank and steer tire. The van became entangled with the semi, rotated clockwise, disengaged from the semi, struck the cut rock wall, rotated in a clockwise direction and came to rest facing southwest across the northbound lanes. There were eleven passengers and the driver in the van. Three passengers were children, two of which were the only survivors of the crash.

Another semi tractor-trailer driver traveling northbound witnessed the collision and immediately contacted 911 emergency medical services (EMS) who received the call at 5:16 am. Kentucky State Police were contacted at 5:17 am, dispatched at 5:24 am, and due to traffic problems arrived at the scene at 6:03 am. The local emergency ambulance received notification at 5:20 am, arrived at the scene at 5:29 am then took command. The local volunteer fire department was contacted at 5:21 am and due to the downed cable barrier, rerouted to access to the scene; the fire department arrived at the scene at 5:56 am. At 5:34 am the local coroner was contacted who arrived and declared the semi truck driver, the van driver, and nine van passengers dead at the scene. Neighboring police departments and fire departments also responded and assisted with the crash.

According to the Kentucky CRASH report, the semi driver was wearing his seatbelt at the time of the crash. Besides the three children that were restrained in child passenger seats, one adult in the van utilized the occupant safety restraint system. Three adults in the van were ejected. Front driver side and passenger side air bags in the passenger van deployed upon impact.

Toxicology results for drugs and alcohol on the semi driver were negative.

Cause of Death

According to the death certificate the cause of the death for the semi driver was due to multiple injuries sustained in a motor vehicle crash and fire.

Recommendations and Discussions

Recommendation No. 1: Commercial vehicle carriers should establish and implement an appropriate comprehensive safety and driver training program that includes recognition of driver distraction and driver fatigue.

It is unknown if the driver in this incident received safety training during his driving career. The company's safety program consisted of drivers watching safety videos on Fridays when they were at the office. Transportation companies should establish, and implement a comprehensive safety program that includes, but is not limited to: 1) defensive driving techniques and highway incident management strategies that include determining appropriate speeds for driving conditions including weather and available daylight; 2) looking eight to ten seconds ahead of the semi; 3) how to avoid becoming distracted; and 4) recognizing fatigue while driving.

The commercial driver had made and received several cell phone calls at the time of the crash. He had a hands-free cell phone device, but it is unknown if he was using that option. Drivers should be educated on the risks of distracted driving and use techniques on how to avoid becoming distracted while operating a commercial motor vehicle.

Some techniques to keep both hands on the wheel and eyes on the road are: 1) Utilize cell phones with voice recognition capabilities. This technology allows the user to answer/ terminate calls, and place calls merely by speaking; 2) Keep the phone on "vibrate", and only use the phone when taking a break, fueling, or when parked in a safe location; 3) Use the automated answer feature to inform callers that the driver is driving and not available to answer the phone and will return the call when it is safe to do so; and 4) Drivers should inform family and friends that while the driver is actually driving, they will not be answering or making calls. Transportation companies that use cell phones to communicate with drivers should develop procedures that allow the driver to return the call when the driver is stopped.

Fatigue is another issue that drivers should be educated to avoid. For two nights the semi driver had time to obtain adequate rest; however, the night previous to the crash, the driver had approximately four hours available to sleep. The lack of rest the semi driver experienced compounded with the time of day the crash occurred (5:15 am), created an environment for the possibility for a major incident. Sunrise on the day of the crash was at 6:38 am. In conversations with semi truck drivers, they refer to the hour before sunrise as the "witching hour" when drivers feel extreme fatigue. Experienced truck drivers will pull over and sleep during that time period and claim that when they wake at sunrise they feel like they have slept solid for eight hours.

Commercial drivers should be educated to recognize signs of fatigue while driving. According to an article, “Driver Fatigue: The Dangers of Driving Sleepy”, signs of driver fatigue include daydreaming, straying out of the lane, excessive yawning, feeling impatient and/or stiff, heavy eyes, and reacting slowly. Methods to avoid driver fatigue include being well rested, getting adequate sleep, taking breaks every two hours where the driver may take a nap, eating a snack, avoiding consumption of alcohol, having a driving plan, and staying hydrated. Companies should assist drivers in fighting fatigue by establishing policies requiring drivers to stop every 100 miles driven or every two hours driven for a rest break. When hauling hazardous materials, company policy should require rest breaks more frequently. Also to help fight fatigue, companies should consider varying drivers’ routes to keep drivers from becoming inured to routine. Every driver should have a route plan that incorporates appropriate rest areas to give the driver access to meals, a safe quiet place to nap, and to be able to stretch or walk to stimulate circulation. In case a driver becomes fatigued while driving, drivers should be provided maps with designated rest areas for semi truck drivers along the route.

The NTSB performed an investigation on this particular crash and distracted driving (cell phone use) and fatigue were cited as the main causes of the crash.

To assist commercial vehicle carriers in establishing a safety program, the Federal Motor Carrier Administration provides guidance on elements that should be included in a safety program for commercial drivers. Safety program guidance can be found on the FMCSA’s website: <http://www.fmcsa.dot.gov/safety-security/eta/ETA%20Final%20508c.pdf>. Insurance companies can also provide assistance (often free of charge) with designing and implementing a safety program for their clients.

Recommendation No. 2: Median barriers along rural interstate roadways with high volumes of large truck traffic should be built with test level 5 barriers.

Interstate medians are designed and constructed to drain water away from road surfaces, to give errant drivers space to regain control of their vehicles, to provide space for emergencies, and to help prevent crossover median crashes. The median in this crash was narrow (60’ wide) and had a four-strand cable barrier (test level 4) eight feet from the left hand northbound travel lane. This type of barrier is not designed to stop a 80,000 pound or more semi truck. Cable test level 4 barriers are capable of preventing passenger vehicles and cargo trucks (up to 18,000 pounds) from crossing medians by stopping or deflecting the vehicle back onto the side of the interstate the vehicle was traveling. It is recommended that test level 5 barriers be installed on interstate highways with narrow medians and high volumes of truck traffic. A 42-inch test level 5 barrier is capable of containing and redirecting an 80,000 semi truck.

The Kentucky Transportation Cabinet should also research alternative median barriers along interstate highways with high volumes of large truck traffic such as a 54-inch tall vertical-faced concrete barrier that creates less roll on impacting vehicles and reduces barrier climbing. Other alternatives to concrete and cable barriers should be researched, such as earthen berms to provide a barrier to prevent cross-over crashes and eliminate headlight glare from oncoming traffic.

Recommendation No. 3: Commercial vehicles should be equipped with the latest communication technology available.

Cell phones and their association with distracted driving are at the center of a national debate. The general public drives and talks on cell phones, including commercial drivers. Transportation companies require cell phones to communicate with drivers. Some companies require the driver to pull over before speaking on the cell phone; other companies do not. Hands-free devices are available but still require one hand off the wheel to touch the “on” button, or to dial and push the “send” button, and to push the “end” button to terminate the call.

Technology keeps evolving and some of the newest cell phones have voice recognition capability. This technology is literally “hands free”. The phone can answer on voice command, dial on voice command, and determine GPS location. This voice technology allows for the driver to keep both hands on the steering wheel. Further research on cell phones equipped with speech recognition and true hands-free ability should be performed.

Recommendation No. 4: Transportation companies should consider banning cell phone use by drivers while operating a commercial vehicle.

Currently the FMCSA permits commercial drivers to use hands-free cell phone devices while operating a commercial vehicle. Some transportation companies have made it company policy that drivers cannot use cell phones, even with hands-free devices, while the commercial vehicle is in motion. Drivers are required to find a safe location and stop the vehicle before using a cell phone.

Recommendation No. 5: Transportation companies should require drivers to have adequate rest before operating a commercial vehicle.

Federal Motor Carrier Administration Standard 392.3 makes it very clear that commercial drivers, when fatigued, are not to operate a commercial vehicle. Transportation companies should require drivers to have adequate rest before beginning or resuming their route. Penalties for driving fatigued should be instituted and enforced by the company.

Recommendation No. 6: Research should be performed on the design and location of fuel tanks to reduce their exposure on commercial vehicles.

Semi trucks have two 140 gallon, or greater, diesel fuel tanks which are exposed; one on each side of the semi. These exposed tanks are at risk for penetration and a resulting fire. Research should be performed on reengineering and relocating fuel tanks on commercial vehicles to reduce the risk of penetration and fire.

Keywords

Cell phone
Distraction
Passenger van
Semi truck driver

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Acknowledgements

Kentucky State Police
Local coroner
National Transportation Safety Board

The Kentucky Fatality Assessment & Control Evaluation Program (FACE) is funded by grant 2U60OH008483-06 from the Centers for Disease Control and the National Institute of Safety and Health. The purpose of FACE is to aid in the research and prevention of occupational fatalities by evaluating events leading to, during, and after a work related fatality. Recommendations are made to help employers and employees to have a safer work environment. For more information about FACE and KIPRC, please visit our website at: www.kiprc.uky.edu



Picture of semi truck path through median. Picture property of KY FACE.



Picture of brake marks in median. Picture property of KY FACE.



Picture of ditch, cut rock wall, and truck brake drums. Picture property of KY FACE.

